Pre-exposure to aqueous gotu kola extract mitigates the effects of hydrogen peroxide, benzoyl peroxide, and ultraviolet type A-mediated oxidative stress by priming the fibroblast’s native antioxidant defense mechanisms.

**Conclusion:**

1. The solvent of extraction affects the final composition of the extract and may alter the extract’s antioxidant activity.
2. Pretreatment with aqueous extracts of gotu kola reduces decreases the inflammatory response of adult skin fibroblasts in response to exogenous oxidative stress.
3. Aqueous gotu kola extract does not increase NRF2 in fibroblasts. However, gotu kola protects against UVA-induced decreases in NRF2 mRNA.

**Future Studies:**

1. Evaluate the botanical extracts by high performance liquid chromatography and mass spectrometry to analyze which phytochemicals are present in gotu kola’s extracts.
2. Perform immunocytochemistry to determine the sub-cellular compartments expressing NRF2 and how this is affected with exposure to gotu kola.

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**References and Acknowledgements**